IN THE CLAIMS:

Claim 1, line 8: after "for", insert --creating skeletal and edge contour data and--;

a1

Claim 1, line 12: after "means for", insert --labeling and interrelating said skeletal and edge contour data and--.

a2

Please cancel claim 10 without prejudice.

REMARKS

Applicant's attorneys wish to thank Examiner Tim Vo for a fine review and detailed Office Action.

Reconsideration of the above-identified patent application is respectfully requested in view of the following remarks. Claim 1 has been amended. Claim 10 has been canceled. Claims 1 through 9 and 11 through 20 remain in the application.

The rejection of claims 1 through 9 and 11 through 20 under 35 U.S.C. §102 as being anticipated by FUTAMURA et al is respectfully traversed for the following reasons:

(a) With respect to claims 1, 12, and 20, the FUTAMURA et al reference is cited as teaching all of the elements recited in paragraphs (a) through (c) of paragraph 3 of the Office Action. In response, Applicant's attorneys state for the record that Examiner Tim Vo is absolutely correct in stating that FUTAMURA et al describes a system for automatically generating an embroidery design. However, Applicant wishes to highlight various distinctions with respect to FUTAMURA et al, which it is respectfully believed are significant, in the anticipatory sense of 35 U.S.C. §102.

(1) To begin with, the methods used by FUTAMURA et al provide a different quality of embroidery than that taught by Applicant. It will become more evident with the on-going discussion that Applicant's method is substantially different than that of FUTAMURA et al. It will also be observed upon further discussion, that FUTAMURA et al does not teach complete solutions to significant problems

addressed by Applicant.

(2) Loading a pattern into an image data file, per se, is not considered to be a unique feature of Applicant's method. However, please note that FUTAMURA et al specifies the reading of only a monochrome (black and white) image into a binary bitmap, regardless of the presence of any color or shading present in the scanned pattern (column 5, lines 1-25). By contrast, Applicant's method allows any type of pattern (monochrome or color) to be scanned. This pattern may contain an infinite number of colors and shadings that are represented as unique 24-bit value pixels within the bitmap, as described in the specification at page 18, lines 7-16. Claim 1 of Applicant's invention recites that the bitmap represents a color. Therefore, FUTAMURA et al does not meet Applicant's claim. FUTAMURA et al processes monochrome data into a color image, as explained at the beginning of the detailed description in column 5, the input pattern is composed only of continuous line components (column 5, lines 25-29).

Additionally, the embroidery design generated from these continuous line components may contain stitching of

only constant width, triple-stitch, constant width zig-zag stitching (column 6, lines 1-25). No provisions are described for applying other types of stitching (e.g., fill stitch). Neither are there provisions for determining appropriate variable angle zig-zag stitching that is needed in Applicant's method, when lines have irregular or non-uniform boundaries. No provisions are described in FUTAMURA et al for handling cases where multiple pattern lines intersect (i.e., singular regions within the pattern). Thus, FUTAMURA et al will work only with simple black and white patterns, and will produce only very simple embroidery designs.

(3) Storing the image data file, per se, is again not considered to be a unique feature of Applicant's method. Again, however, please note that storage in Applicant's method is accomplished by a 24-bit per pixel file, needed for color representation, as taught at page 18, lines 14 through 16; whereas FUTAMURA et al utilize a rather simple, 1-bit binary representation that is exemplary of monochrome.

(b) Regarding claims 2 and 16, FUTAMURA et al teaches an embroidery data generating mechanism that comprises

segmenting means for characterizing each pixel of the image data file into an object (column 5, lines 10-30). The segmenting means refers to the processing of the image, wherein the monochrome image data that is scanned is then utilized directly without any additional filtering, interpretation, or analysis. The data is simply examined as the raw binary bitmap data for "trains of connected black pixels". This is accomplished regardless of whether these pixels may in fact represent noise, half-toning, or other unintended artifacts introduced through the scanning process (column 5, lines 25-30).

Contrary to this teaching, Applicant teaches methods that are vastly more complex as described in the specification at page 27, lines 1-24 and page 28, lines 1-21. The "means for classifying each of said objects as a thin object, or thick object" (element (ii) of claim 2) refers to a thin, predominantly regular object, or a thick, predominantly irregular object. There is no description for computations involving the thickness (element (ii) of claim 2) and/or regularity (element (iii) of claim 2) for continuous line components. By contrast, Applicant describes and defines "thin" or "thick" objects as

indicative not solely of the actual thickness of a region (as might be implied), but rather as a particular type of object. Using the adjectives thick and thin provides a partial qualitative description of what types of objects might intuitively be thought of as contained within the different sets. Thus, when classifying objects, Applicant does not merely compute thickness (see page 32, lines 22-23; page 33, lines 1-23; page 34, lines 1-23; and page 35 line 1).

(c) More importantly, however, the "means for locating and interpreting a set of regular and singular regions for embroidery data point generation" are not shown in column 5, lines 19-24 of FUTAMURA et al, as the Office asserts. The column and lines cited by the Office refer to the process of scanning an image and storing it within RAM. This process has nothing to do with locating and interpreting a set of regular and singular regions. Applicant respectfully believes that this method step is completely unique to his invention (see pages 45-60).

(d) Neither is the "path generation means for computing an optimum sew order for at least one extracted

column", as cited by the Office to be contained in column 5 lines 51-67, supported in FUTAMURA et al. There appears to be no such means for this within FUTAMURA et al. The column and lines cited refer to the process of thinning the fine line components to produce "components with line width of one pixel." This process has nothing to do with computing an optimum sew order. Further, there appears to be no mention anywhere of performing any type of path planning. This is a critical processing step in Applicant's method.

(e) With respect to the "embroidery output means for generating an embroidery output file", the citation to FUTAMURA et al refers to the process of using a scanner to read monochrome patterns, which are stored as a bitmap representation. This process has nothing to do with generating an embroidery output file. There is no mention anywhere in FUTAMURA of outputting any sequential data that could compose an embroidery output file. FUTAMURA et al claims that their specification will result in the output of an embroidery design, although where and how this design exists (in memory, in a file, etc.) is not specified. Thus, someone skilled in the art would need to develop a novel, non-trivial mechanism to determine the order in which

zig-zag or triple stitch stitching should be sewn, and then would need to formulate some sort of file specification that outputs commands or data readable by a computerized sewing machine. This file would then ultimately specify the location and sequential ordering of each stitch to be sewn.

The commands or data in this file are referred to as mark or control points within applicant's specification, and the mechanism used to determine the sequential order and location in which they are generated is described at pages 65-68.

(f) Responding to the rejection of claims 3 and 18, that FUTAMURA et al does not teach line-fitting means in the sense of Applicant's method. In this description, an object comprises an outer contour, a predetermined number of inner contours, and a skeleton contour, said line-fitting means comprising a gallus-neurath triangular filter (column 5, lines 41-58). Such distinguishing features have been added to the claims by the present Amendment.

The column and lines cited in support of the "line-fitting means" do not specify or imply any line-fitting

means, but simply define lines as series of black dots or series of single pixel width dots. These are not true mathematical lines or vectors, which have no thickness. However, elsewhere in FUTAMURA et al, specifically at column 6, lines 34-40, such a line fitting mechanism is alluded to, although never described. For this reason, Applicant does not believe that the rejection to claims 3 and 18 is tenable in accordance with 35 U.S.C. §§102 or 103.

(g) Responding to the Office remarks regarding claims 4 and 13, please observe that FUTAMURA et al does not teach stitch angle determination means for determining a stitch angle that produces a minimal plurality of fragments. This wording refers to "fill-stitched regions". The column and lines cited in support of the rejection of these claims refer to determining whether triple stitch or zig-zag stitch of a specific width should be used to recreate a region. This process has nothing to do with determining a stitch angle for a fill stitch region. In fact, it is impossible for FUTAMURA et al to provide such a means, since fill stitch regions (containing rows of parallel stitching at a constant angle) are not generated or mentioned. Only triple stitch or zig-zag type stitching is mentioned.

(h) With respect to the comments regarding claims 5, 14, and 19, FUTAMURA et al, does not teach Applicant's claimed methodology. The column and lines cited by the Office in support of the process of setting needle locations for zig-zag or triple stitch type embroidery have nothing to do with the optimal order for the plurality of fragments within a fill stitch region. Again, it is impossible for FUTAMURA et al to provide such a means, since fill stitch regions are never generated or even mentioned.

(i) The recitation with respect to claim 6 refers to a labeling means for labeling a plurality of points on skeleton and edge contours. Although FIGURE 5 contains a design with arrows that point to the outer and inner edge contours of regions within that design in FUTAMURA et al, this is a simple and trivial undisputed fact. Specifically, any contiguous region consists of an outer edge contour and zero or more inner edge contours. This figure is for a simple property of geometric regions. Making note of this property does not, in and of itself, constitute labeling. Furthermore, the claim in question refers to means of determining and labeling specific points on these outer and inner edge contours, as well as the contours that compose

the skeleton of a region. For example, labeling various types of characteristic edge points, as depicted and described in Applicant's specification, is a completely unique concept not just within the field of computerized embroidery, but even within the much larger field of image processing. (See FIG. 7 and pages 45-50.) Again, the presently amended claims now reflect this labeling and interrelating feature.

(j) Responding to the Office comments regarding claims 7 and 15, FUTAMURA et al does not teach merging means for merging a series of points from the plurality of points on the skeleton contour. FUTAMURA et al does not locate, describe, or even imply the presence of skeletal nodes within a region's skeletal data (i.e., points where a skeletal branch terminates or where three or more skeletal branches intersect).

(k) Responding to the Office comments concerning claim 8, please observe that FUTAMURA et al does not locate, describe, or even imply the presence of singular regions within a shape. Even if "well-known region labeling processes" are applied as cited in column 8, lines 42-45,

FUTAMURA et al describes the coding only of regular regions that are referred to as continuous line components.

(l) Regarding the Office comments for claim 9, there are no such means. The column and lines cited by the Office in support of the claimed method refer to the process of thinning connected pixel components. This process has nothing to do with smoothing a sequence of stroke normals. The only location within FUTAMURA et al where the presence or determination of stroke normals is even implied occurs in column 7, lines 9-11. In this section of the patent, the discussion provides for setting locations on either side of a short vector. Pairs of these needle locations correspond only slightly to the recited methodology regarding a stroke normal. There is no discussion providing for needle locations that are further processed or smoothed.

(m) Regarding the Office comments for claims 11 and 17, FUTAMURA et al processes contiguous blocks of pixels having only a single constant solid color (namely black pixels). This is substantially different from considering blocks of pixels that may have different but similar color values distributed throughout their shape. No means are

shown by which such pixels could be processed.

Claim 1 has been amended to further define the invention of FUTAMURA '056 and FUTAMURA '711, which describes the loading of color images but does not generate a skeleton, label it, or interrelate it to a label edged contour.

In summary, Applicant has demonstrated by way of the aforesaid discussion that his invention is significantly different from that taught or suggested by FUTAMURA et al.

In view of the foregoing amendments and remarks, Applicant respectfully requests that claims 1 through 9 and 11 through 20 be allowed and that the application be passed to issue.

Respectfully submitted,

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